A New Tool to Interpolate Conversion Coefficients and E0 Electronic Factors

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Precise values of theoretical conversion coefficients, involving electrons and internal pairs plays an important role deducing transition multipolarities, mixing ratios, total transition intensities, etc. For more than 25 years the HSICC and HSMRG programs have been used for the Evaluated Nuclear Structure Data File (ENSDF). It was developed primarily to interpolate the Hager and Seltzer conversion coefficients [1]. Further improvement was made by using Dragoun, Plajner and Schmutzler [2] tabulation for the N+ shells. A web interface has been created, hosted by the National Nuclear Data Center at the Brookhaven National Laboratory, allowing access for a wider community.

Recently a more accurate and extensive conversion electron coefficient table has been published by Band et al. [3]. The U. S. Nuclear Data Program Meeting held at Brookhaven National Laboratory on November 6-7, 2003 recommended to adopt the new tabulations for the ENSDF.

We report on the development of the new program package, BRICC, which is being developed to calculate interpolated values of conversion electron coefficients for all atomic shells (K to R2) for Z=10 to 126. To improve the accuracy of the cubic spline interpolation procedure and to extend the tabulations for energies up to 6 MeV further calculations are required. Additional tabulations for pair conversion coefficients [4] as well as for E0 electronic factors [5] are also included in the new program.

References

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